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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,753	11/17/2003	Leonard Forbes	400.260US01	3377

27073 7590 06/09/2006

LEFFERT JAY & POLGLAZE, P.A.  
P.O. BOX 581009  
MINNEAPOLIS, MN 55458-1009

EXAMINER
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LE, THAO P

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/714,753		FORBES, LEONARD	
	<b>Examiner</b>		<b>Art Unit</b>	
	Thao P. Le		2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,7-11 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5,7-11 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1 page</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

DETAILED ACTION

***Information Disclosure Statement***

Information Disclosure Statement (IDS) filed on **12/20/05** and made of record.

The references cited on the PTOL 1449 form have been considered.

Claims 1-5, 7-11, 23 are pending.

**Claim Rejections**

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-11, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eitan, U.S. Patent No. 6,552,387, in view of Ling, U.S. Patent No. 5,811,852.

Regarding claims 1, 9, and 23, See Figs. 2-3, 18B, and Cols. 1-28, Eitan discloses a planar NROM transistor or a processor that generates control signals for the system, a memory array coupled to the processor and having a plurality of memory cells (Col. 1; EEPROM) comprising a substrate layer 12 (or 62) having two source/drain regions 14/16 (or 58/60) separated by normally fully depleted body region (the channel, and the heavily doped channel shown in Eitan, lines 55-57, Col.2, is inherently a fully depleted channel), an oxide layer 18 (or 56) formed above each of the source/drain regions (parts of source/drain regions are beneath the layer 18 (or layer 56); Figs. 2-3), a gate insulator 20 (or 54) formed over the body region and oxide layer, the gate insulator capable of storing a plurality of charges in different locations of the insulator (reverse and forward directions; Figs. 2-3); and a control gate 24 (or 50) formed on the gate insulator. Eitan fails to disclose the substrate is an ultra thin silicon on insulator layer. Ling discloses the structure of EEPROM whereas the substrate is the silicon on insulator layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a silicon-on-insulator layer as a substrate in the method of forming ROM because the silicon on insulator layer is used to improve the performance of transistors, exhibits low resistance, the thickness, impurity concentration, and crystalline perfection can be controllable.

Still regarding claim 9, Eitan fails to disclose a substrate comprises an insulator layer and the silicon on insulator layer and wherein the thickness of the silicon on insulator layer is less than 100 nm. However, the selection of such parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.,**

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would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art. "Normally, it is to be expected that a change in **energy, concentration, temperature, time, molar fraction, depth, thickness, etc., or in combination of the parameters** would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Regarding claims 7-8, It is inherent that the transistor of EEPROM in Eitan has NAND and NOR architectures.

Regarding claims 2-5, it is conventional that the gate insulator is an ONO, oxide-nitride-aluminum oxide, or one of silicon oxides formed by wet oxidation or not annealed, silicon rich oxides composite structures because these composite structures are well known to be the best structures that capable of trapping charges.

Regarding claim 10, Eitan discloses the control gate is comprises of a polysiicon material.

Regarding claim 11, Eitan discloses wherein the first source/drain regions operates as a drain region when the cell is operated in the first direction and as a source region when the cell is operated in the second direction (reverse and forward directions).

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-T (7-6).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun O. Harvey can be reached on 571-272-1835. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Thao P. Le'.

Thao P. Le  
Primary Examiner  
Art Unit 2818  
May 31, 2006.